CHAPTER 2 – AGENCY COORDINATION AND REGULATIONS

CHAPTER 2 – AGENCY COORDINATION AND REGULATIONS

2.1 Overview

2.1.1 Introduction

This chapter discusses in general terms the coordination required between local, state and federal agencies as a result of various drainage laws and rules applicable to highway facilities. The objective is to provide general information and guidance on the designer's role in the legal aspects of highway drainage and the resulting permits and related coordination activities.

General information in this chapter was derived from the AASHTO Model Drainage Manual,[(1)] Chapter 2. Given the significance and number of river crossings and floodplain related issues in highway construction, specific information and guidance related to Federal Emergency Management Agency (FEMA) regulations and requirements is provided based on Georgia DOT policy and practice.

2.1.2 Order of Authority

The descending order of law supremacy is Federal, State, and local and, except as provided for in the statutes or constitution of the higher level of government, the superior level is not bound by the laws, rules or regulations of a lower level. State permit requirements are an example of law supremacy. Federal agencies do not secure permits issued by State agencies, except as required by Federal law. Many laws of one level of government are passed to enable that level to comply with or implement provisions of laws of the next higher level. In some instances, however, a lower level of government may promulgate a law, rule or regulation that would require an unreasonable or even illegal action by a higher level. An example is a local ordinance that would require an expenditure of State funds for a purpose not intended in the appropriation. Many such conflicts in the laws of different levels of government involve constitutional interpretation and must be determined case by case. Such conflicts should be referred to legal counsel before any action is taken.

2.1.3 Related Publications

There are numerous publications on the legal aspects of drainage and water laws. For additional information, the reader is referred to the AASHTO Highway Drainage Guidelines,[(2)] which also includes a glossary of legal definitions.

2.2 Federal Laws

2.2.1 General Laws

Federal law consists of the Constitution of the United States, Acts of Congress, regulations that governmental agencies issue to implement these Acts, Executive Orders issued by the President, and case law. Acts of Congress are published immediately upon issuance and are cumulated for each session of Congress and published in the United States Statutes At Large. Compilations of Federal Statutory Law, revised annually, are available in the *United States Code* (*USC*) and the *United States Code Service* (*USCS*).

The *Federal Register*, which is published daily, provides a uniform system for making regulations and legal notices available to the public. Presidential Proclamations and Executive Orders, Federal agency regulations/documents having general applicability and legal effect, documents required to be published by an Act of Congress, and other Federal agency documents of public interest are published in the *Federal Register*. Compilations of Federal regulatory material, revised annually, are available in the *Code of Federal Regulations (CFR)*.

2.2.2 Drainage

Federal law does not address drainage per se, but many laws have implications that affect drainage design. These include laws concerning:

- Flood insurance and construction in flood-hazard areas
- Navigation and construction in navigable waters
- Water pollution control
- Environmental protection
- Protection of fish and wildlife
- Coastal zone management

Federal agencies formulate and promulgate rules and regulations to implement these laws, and highway designers and hydraulics engineers should remain informed on proposed and final regulations.

Significant Laws

Some of the more significant Federal laws affecting highway drainage are listed below with a brief description of their subject area:

- DEPARTMENT OF TRANSPORTATION ACT (80 Stat. 941, 49 USC 1651 et seq.). This Act established the Department of Transportation and set forth its powers, duties and responsibilities to establish, coordinate and maintain an effective administration of the transportation programs of the Federal Government.

- FEDERAL-AID HIGHWAY ACTS (23 USC 101 et seq.). The Federal-Aid Highway Acts provide for the administration of the Federal-Aid Highway Program. Proposed Federal-aid projects must be adequate to meet the existing and probable future traffic needs and conditions in a manner conducive to safety, durability and economy of maintenance, and must be designed and constructed according to standards best suited to accomplish these objectives and to conform to the needs of each locality.

- FEDERAL-AID HIGHWAY ACT OF 1970 (84 Sta. 1717, 23 USC 109 (h)). This Act provided for the establishment of general guidelines to ensure that possible adverse economic, social and environmental effects relating to any proposed Federal-aid project have been fully considered in developing the project. In compliance with the Act, FHWA issued process guidelines for the development of environmental action plans. These guidelines are contained in 23 CFR 771 and 23 CFR 795 et seq.

- FEDERAL-AID HIGHWAY ACT OF 1966 (80 Stat. 766), AMENDED BY THE ACT OF 1970 (84 Stat. 1713, 23 USC 109 (g)). This Act required the issuance of guidelines for minimizing possible soil erosion from highway construction. In compliance with these

requirements, FHWA issued guidelines that are applicable to all Federal-aid highway projects. Regulatory material is found in 23 CFR 650 Subpart B.

- NATIONAL ENVIRONMENTAL POLICY ACT OF 1969 (42 USC 4321). The National Environmental Policy Act (NEPA) requires federal agencies to evaluate potential adverse impacts whenever they propose an action, grant a permit or agree to fund or otherwise authorize anyone else to undertake an action that might affect environmental resources. The Council on Environmental Quality (CEQ) was created to administer NEPA. Each federal agency must assume responsibility for meeting NEPA guidelines with guidance from CEQ and oversight from EPA.

- THE INTERMODAL SURFACE TRANSPORTATION EFFICIENCY ACT (ISTEA) OF 1991. This Act provided authorization for highways, highway safety and mass transportation for six years. The Act developed a National Highway System that is economically efficient and environmentally sound. It created a foundation for the Nation to compete in the global economy and move people and goods in an energy efficient manner. Under the Act, State and local governments have been given more flexibility in determining transportation solutions, whether transit or highways, and the tools for enhanced planning and management systems to guide them in making the best choices. Funding for the new technologies and activities for enhancing the environment and safety are also available.

- THE TRANSPORTATION EQUITY ACT FOR THE 21ST CENTURY (TEA-21) OF 1998. This Act, which provides authorization for transportation programs for six years, builds on the initiatives established by ISTEA. TEA-21 continues the ISTEA programs and increases the emphasis on improving highway safety, enhancing communities and the natural environment, and expanding the nation’s economic growth through efficient and flexible transportation. TEA-21 retains the realignment of the Federal-aid highway system established by ISTEA, which included the National Highway System.

2.3 Navigable Waters Regulations

2.3.1 Constitutional Power

The Congress of the United States is granted constitutional power to regulate "commerce among the several states." A part of that power is the right to legislate on matters concerning the instrumentalities of interstate commerce such as navigable waters. The definition of navigable waters expands and contracts depending upon the breadth required to adequately implement the Federal purpose. The result is that Congress can properly assert regulatory authority over at least some aspects of waterways that are not in themselves subject to navigation.

2.3.2 Federal Agencies

Basically, four Federal agencies implement existing Federal regulations, as discussed in the following subsections. When the designer becomes involved in obtaining approvals from the Federal agencies, be aware that these agencies do not always work in concert. Quite often, they will not agree with one another. This can result in significant project delays unless early coordination is initiated and diligently pursued. These conflicts between Federal agencies occur as a result of their varying rules; some are "regulators" while others are "resource" motivated. For this reason, they will have different goals and, in some instances, different

definitions of such elements as wetlands. When conflicts occur, it is best to quickly determine which agency has primary responsibility and attempt to satisfy its needs.

U.S. Coast Guard (USCG)

USCG has regulatory authority under Section 9 of the Rivers and Harbors Act of 1899, 33 USC 401 (delegated through the Secretary of Transportation in accordance with 49 USC 1655 (g)) to approve plans and issue permits for bridges and causeways across navigable rivers. As outlined in 23 CFR 650, the area of jurisdiction of USCG and FHWA is established as follows.

FHWA has the responsibility under 23 USC 144(h) to determine that a USCG permit is not required. This determination shall be made at an early stage of project development so that any necessary coordination can be accomplished during environmental processing.

USCG has the responsibility:

- To determine whether or not a USCG permit is required for the improvement or construction of a bridge over navigable waters except for the exemption exercised by FHWA as stated above

- To approve the bridge location, alignment and appropriate navigational clearances in all bridge permit applications

For more information related to navigational clearances for bridges, see 23 CFR 650 Subpart H.

U.S. Army Corps of Engineers (USACE)

USACE has regulatory authority over the construction of dams, dikes or other obstructions (which are not bridges and causeways) under Section 9 (33 USC 401). USACE also has authority to regulate Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403), which prohibits the alteration or obstruction of any navigable waterway with the excavation or deposition of fill material in such waterway. Section 11 of the Rivers and Harbors Act of 1899 (33 USC 404) authorizes the Secretary of the Army to establish harbor lines. Work channelward of those lines requires separate approval of the Secretary of the Army and work shoreward requires Section 10 permits.

Section 404 of the Clean Water Act (33 USC 1344) prohibits the unauthorized discharge of dredged or fill material into waters of the United States, including navigable waters. Such discharges require a permit. The term "discharge of fill material" means the addition of rock, sand, dirt, concrete or other material into the waters of the United States incidental to construction of any structure. USACE has granted Nationwide General Permits for 26 categories of certain minor activities involving discharge of fill material. Under the provisions of 33 CFR 330.5(a)(15), fill associated with construction of bridges across navigable waters of the United States, including cofferdams, abutments, foundation seals, piers, temporary construction and access fills, are authorized under the Nationwide Section 404 Permit, provided that such fill has been permitted by USCG under Section 9 of the Rivers and Harbors Act of 1899 as part of the bridge permit. Therefore, formal application to USACE for a Section 404 Permit is not required, unless bridge approach embankment is located in a wetland area contiguous to said navigable stream. USACE has Section 404 regulatory authority over streams that USCG has placed in the "advance approval" category. This

category of navigable streams is defined as navigable in law but not actually navigated other than by logs, log rafts, rowboats, canoes and motorboats. Notably, this regulation does not apply to the actual excavation or "dredging of material," provided that this material is not reintroduced into any regulated waterway including the one from which it was removed.

Section 404 of the Clean Water Act (33 USC 1344) requires any applicant for a Federal permit for any activity that may affect the quality of waters of the United States to obtain a water quality certification from the Georgia Environmental Protection Division (EPD).

The 1992 Energy and Water Development Appropriation Act provides guidance to use the 1987 Manual of the USACE in the delineation of wetlands. This allows more flexibility in the definition and determination of wetlands.

Federal Highway Administration (FHWA)

FHWA has the authority to implement the Section 404 Permit Program (Clean Water Act of 1977) for Federal-aid highway projects processed under 23 CFR 771.115 (b) as categorical exclusions. This authority was delegated to FHWA by USACE to reduce unnecessary Federal regulatory controls over activities adequately regulated by another agency. This permit is granted for projects where the activity, work or discharge is categorically excluded from environmental documentation because such activity does not have an individual or cumulative significant effect on the human environment.

U.S. Environmental Protection Agency (USEPA)

USEPA is authorized to prohibit the use of any area as a disposal site when it is determined that the discharge of materials at the site will have an unacceptable adverse effect on municipal water supplies, shellfish beds and fishery areas, wildlife or recreational areas (Section 404 (c), Clean Water Act, 33 USC 1344). Also, USEPA is authorized under Section 402 of the Clean Water Act (33 USC 1344) to administer and issue a "National Pollutant Discharge Elimination System" (NPDES) permit for point source and non-point source discharges.

2.4 Fish and Wildlife Service

2.4.1 Requirements

The Fish and Wildlife Act of 1956 (16 USC 742 et seq.), the Migratory Game-Fish Act (16 USC 760c-760g) and the Fish and Wildlife Coordination Act (16 USC 611-666c) express the concern of Congress with the quality of the aquatic environment as it affects the conservation, improvement and enjoyment of fish and wildlife resources. The Fish and Wildlife Coordination Act requires that "whenever the waters of any stream or body of water are proposed or authorized to be impounded or diverted, the channel deepened, or the stream or other body of water otherwise controlled or modified for any purpose whatever, including navigation and drainage, by any department or agency of the United States, or by any public or private agency under Federal permit or license, such department or agency shall first consult with the United States Fish and Wildlife Service (USFWS), Department of the Interior, and with the head of the agency exercising administration over the wildlife resources of the particular State with a view to the conservation of wildlife resources by preventing loss of and damage to such resources as well as providing for the development and improvement thereof."

2.4.2 Service's Role

USFWS's role in the permit review process is to review and comment on the effects of a proposal on fish and wildlife resources. It is the function of the regulatory agency (e.g., USACE, USCG) to consider and balance all factors, including anticipated benefits and costs in accordance with NEPA, in deciding whether to issue the permit (40 FR 55810, December 1, 1975).

2.5 Tennessee Valley Authority

The TVA Act is the legislation passed by Congress in 1933 that established the Tennessee Valley Authority. Section 26a of that Act requires that TVA approval be obtained before any construction activities can be carried out that affect navigation, flood control, or public lands along the shoreline of the TVA reservoirs or in the Tennessee River or its tributaries. Permit approvals for construction under Section 26a are considered federal actions and are therefore subject to the requirements of the National Environmental Policy Act and other federal laws.

Typical structures and projects that require TVA approval under a Shoreline Construction Permit include boat docks, piers, boat ramps, bridges, culverts, commercial marinas, barge terminals and mooring cells, water intake and sewage outfalls, and fill or construction within the floodplain. Section 26a regulations apply to both the location of construction projects and the types of activities carried out. Note that permits are not required for certain types of activities, including:

- Replacement of culverts of same or greater hydraulic capacity, creating no new or additional obstruction, and within the same highway alignment are not new obstructions and are to be considered maintenance activity.

- Replacement of bridges of the same or greater hydraulic capacity, creating no new or additional obstruction, and within the same highway alignment are not new obstructions and are to be considered maintenance activity

Shoreline Construction Permits are needed for both on-reservoir and off-reservoir activities:

- **On-reservoir activities:** those that occur in, across, or along TVA reservoirs and regulated rivers and streams in the Tennessee Valley. Regulated rivers and streams are located downstream of TVA dams and are directly impacted by the operation of the dams.

- **Off-reservoir activities:** those that occur on all other perennial rivers and streams in the Tennessee Valley watershed. The construction standards outlined on this site do not apply to off-reservoir activities, which are considered on a case-by-case basis.

Detailed information and permit applications are available at the TVA website (http://www.tva.gov/index.htm).

2.6 National Flood Insurance Program

2.6.1 Flood Insurance

The National Flood Insurance Act of 1968, as amended, (42 USC 4001-4127) requires that communities adopt adequate land-use and control measures to qualify for insurance. Federal criteria promulgated to implement this provision contain the following requirements that can affect certain highways:

- In riverine situations, when the Administrator of the Federal Insurance Administration has identified the flood-prone area, the community must require that, until a floodway has been designated, no use, including land fill, be permitted within the floodplain area having special flood hazards for which base flood elevations have been provided, unless it is demonstrated that the cumulative effect of the proposed use, when combined with all other existing and reasonably anticipated uses of a similar nature, will not increase the water surface elevation of the 100-year flood more than 1.0 foot at any point within the community.

- After the floodplain area having special flood hazards has been identified and the water surface elevation for the 100-year flood and floodway data have been provided, the community must designate a floodway which will convey the 100-year flood without increasing the water surface elevation of the flood more than 1.0 foot at any point and prohibit, within the designated floodway, fill, encroachments, and new construction and substantial improvements of existing structures that would result in any increase in flood heights within the community during the occurrence of the 100-year flood discharge.

- The participating cities and/or counties agree to regulate new development in the designated floodplain and floodway through regulations adopted in a floodplain ordinance. The ordinance requires that development in the designated floodplain be consistent with the intent, standards and criteria set by the National Flood Insurance Program (NFIP).

2.6.2 Flood Disaster Protection

The Flood Disaster Protection Act of 1973 (PL 93-234, 87 Stat. 975) denies Federal financial assistance to local communities that fail to qualify for flood insurance. Formula grants to States are excluded from the definition of financial assistance, and the definition of construction in the Act does not include highway construction; therefore, Federal aid for highways is not affected by the Act. The Act does require communities to adopt certain land-use controls to qualify for flood insurance as described in Section 2.6.1. These land-use requirements could impose restrictions on the construction of highways in floodplains and floodways in communities which have qualified for flood insurance.

2.6.3 Local Community

The local community with land-use jurisdiction, whether it is a city, county or State, has the responsibility for enforcing NFIP regulations in that community if the community is participating in the NFIP. Consistency with NFIP standards is a requirement for Federal-aid highway actions involving regulatory floodways. The community, by necessity, is the entity that must submit proposals to FEMA for amendments to NFIP ordinances and maps in that

community should it be necessary. The GDOT and its consultants should deal directly with the community and, through them, deal with FEMA. Determination of the status of a community's participation in the NFIP and the review of applicable NFIP maps and ordinances are, therefore, essential first steps in conducting location hydraulic studies and preparing environmental documents.

2.6.4 NFIP Maps

Where NFIP maps are available, their use is mandatory in determining whether a highway location alternative will include an encroachment on the base floodplain. Four types of NFIP maps are published:

- Flood Hazard Boundary Map (FHBM)
- Flood Boundary and Floodway Map (FBFM)
- Flood Insurance Rate Map (FIRM)
- Digital FIRM (DFIRM)

A FHBM is generally not based on a detailed hydraulic study and, therefore, the floodplain boundaries shown are approximate. A FBFM, in contrast, is generally derived from a detailed hydraulic study and should provide reasonably accurate information. The hydraulic data from which the FBFM was derived are available through the regional office of FEMA or its contractors. This is normally in the form of computer input data records for calculating water surface profiles. A FIRM is generally produced at the same time using the same hydraulic model and has appropriate rate zones and base flood elevations added. A DFIRM is an electronic product linked to a Geographical Information System (GIS database). It includes the same information as a FIRM and/or FHBM but can include additional information as well, such as hydraulic structure data.

Communities may or may not have published one or more of the above maps depending on their level of participation in the NFIP. Information on community participation in the NFIP is provided in the *National Flood Insurance Program Community Status Book,* which is published semiannually for each state.

2.6.5 Definitions of NFIP Terminology

Frequently used terms related to NFIP compliance are defined below.

The BASE FLOOD is the flood having a 1% chance of being equaled or exceeded in a given year. This is often referred to as the 100-year flood.

The BASE FLOOD ELEVATION is the water surface elevation at a given location associated with the base flood.

The BASE FLOOD PROFILE is the water surface profile along a stream associated with the base flood.

The COMMUNITY is the local entity (city or county government) with jurisdiction for floodplain administration under the NFIP.

A CONDITIONAL LETTER OF MAP REVISION (CLOMR) is a letter issued by FEMA that approves a proposed project. The letter states that the project will result in the specified

changes to the base flood elevations, floodway elevations, floodplain limits, and floodway boundaries if constructed as shown. The request for a CLOMR is made by the Community.

An ENCROACHMENT in the context of this manual is a placement of embankment fill or structure within the floodplain and/or floodway so as to affect or alter flow conditions.

A FLOOD INSURANCE RATE MAP (FIRM) is an official map of a community showing the delineation of the area Special Flood Hazard Area, along with insurance risk premium zones applicable to the community. Some FIRM's include contours of the Base Flood Elevations in areas where detailed hydraulic studies have been made.

The FLOODPLAIN is the land area inundated by the base flood. Also referred to as the SPECIAL FLOOD HAZARD AREA (SFHA).

The FLOODWAY is a portion of the floodplain that must be reserved in order to prevent activities that would cumulatively cause an increase in the base flood profile of more than a designated height. The designated height is never more than a foot, but in some communities can be less than a foot. Also referred to as the REGULATORY FLOODWAY or DESIGNATED FLOODWAY. This term applies only to floodplains within which a floodway has been officially established.

The FLOODWAY FRINGE is the portion of the floodplain that lies outside of the floodway. This term applies only to floodplains within which a floodway has been officially established.

A LETTER OF MAP REVISION (LOMR) is a letter issued by FEMA that revises the base flood elevations, floodway elevations, floodplain limits, and floodway boundaries for a given stream reach, based on documentation of changed or updated physical conditions. The request for a LOMR is made by the Community.

A NO-RISE certificate is a document submitted to the Community, with attached hydraulic computations, affirming that the proposed encroachment will not cause an increase in the base flood profile, the floodway width, or the floodway profile. See Appendix F for a sample.

The FLOODWAY ELEVATION is the water surface elevation resulting from encroachment in the floodplain to the designated floodway boundaries.

2.7 NFIP Requirements

All floodplain crossings must meet the Federal Emergency Management Agency (FEMA) regulation requirements. The GDOT adheres to the guidelines set forth in the Federal Highway Administration's Federal-Aid Policy Guide, 23 CFR 650A, September 30, 1992, Transmittal 5, "Procedures For Coordinating Highway Encroachments On Floodplains With Federal Emergency Management Agency." A copy of this policy guide is included in Appendix A of this chapter.

2.7.1 Longitudinal Roadway Encroachments

Since longitudinal floodplain and floodway encroachments by new and widened roadways generally have a major effect on the flood elevations of the affected stream, these encroachments shall be avoided if at all possible. The project manager and location engineer shall follow the following basic rules for roadway widenings, parallelings and new locations:

1. For roadway widening projects, the typical section shall be set to avoid or minimize the placing of additional roadway fill within the adjacent floodplain.
2. For roadway paralleling projects, the new parallel roadway shall be placed to avoid or minimize longitudinal encroachments on floodplains.
3. New location roadway projects shall be aligned to avoid or minimize longitudinal encroachments on floodplains.
4. For all cases, longitudinal encroachment on a delineated FEMA regulatory floodway shall be avoided if at all possible.

Note: In the case of a significant longitudinal encroachment on the floodplain, it is required to run the FEMA computer model for the existing and proposed conditions, following the methods and procedures in Section 2.9.

2.7.2 Categories and Recommendations for Bridges and Culverts

All bridges within the State fall into one of the following five categories concerning Federal Emergency Management Agency (FEMA) involvement. All culverts fall within categories two through five.

1. If the stream has an established regulatory floodway, the structure should be designed, if practical, so that the bridge approaches will not encroach on the regulatory floodway. The bridge superstructure should also clear the floodway elevation. The bridge substructure is considered, in most cases, to be an insignificant encroachment. If the design keeps the bridge approach out of the floodway and the low chord above the floodway elevation, the affected Community shall be sent a copy of the proposed roadway plans and the preliminary bridge layout along with a letter stating that the proposed construction will not encroach on the regulatory floodway, and a request for a "letter of concurrence" from the Community, approving the project. If an exceptionally large pier is to be constructed in the floodway, especially at a new crossing, it may be necessary to treat the bridge under Category 2 or 3 below. Also, if the project is located within a high risk area as determined by the hydraulic engineer, it may be necessary to treat the bridge under category 2 or 3 below.

2. If the stream has an established regulatory floodway, and encroachment on the regulatory floodway is necessary, the structure should be designed, if practical, so that there will be no change in the base flood elevations, floodway elevations, or floodway widths at any cross section. The GDOT defines a "No-Rise" project as one that causes no change in the base flood profile or the floodway profile rounded to the nearest 0.1 foot or in floodway width rounded to the nearest 1 foot for any cross section outside the Department's right of way. Changes greater than 0.1 foot in the base flood profile or the floodway profile and/or 1 foot in the floodway width inside the right of way are considered integral to the bridge structure and do not affect any other property.

   For Consultant projects, a signed and sealed "No-Rise" certification by a registered professional engineer is required. See Appendix F of this chapter. If this criterion is met, two original sets of supporting documentation shall be prepared. One set is for submission to the affected Community, requesting a "letter of concurrence" approving the project to be sent to the GDOT. One set will be retained in the project file for GDOT's records;

Clarification: A "No-Rise" condition can be shown in either of the following cases:

1. When the total difference in the calculated floodway elevations at a section is 0.05 ft or less. An example of a "No-Rise" for this condition is a comparison of the elevations 100.98 and 100. 93 ft; and
2. When the calculated floodway elevations are the same after rounding these elevations to the nearest 0.1 ft. An example of this condition is a comparison of the elevations 100.04 and 99.96 ft. Since both these elevations round off to 100.0 ft, this is considered a "No-Rise" condition.

The comparison of floodway widths is similar.

3. If the stream has an established regulatory floodway, and an encroachment on the regulatory floodway is necessary, and the criteria of Category 2 are not met, then the affected Community will need to make arrangements and/or obtain approval from any affected property owners. The Community will also be responsible to coordinate with FEMA to revise the effective base flood elevations, floodway widths, and floodway elevations.

   For Consultant projects, the Professional Certification Form required by FEMA is to be completed, and stamped and signed by a registered professional engineer (see Appendix E). In this case, three original sets of supporting documentation shall be prepared. Two sets are for submission to the affected Community, requesting a "letter of concurrence" to be sent to FEMA and copied to the GDOT. One set will be retained in the project file for GDOT's records. The Community's "letter of concurrence" approves the project as designed along with the proposed revision to the base flood elevations, floodway elevations, and floodway widths.

4. For a bridge crossing a floodplain that is shown on a FIRM map, but does not have a regulatory floodway, the bridge will be sized to limit the backwater to no more than a 1-foot increase in the existing base flood elevation.

5. For bridges that are outside of NFIP communities or NFIP identified flood hazard areas, the bridge shall be sized using the GDOT design criteria and requirements (see Chapter 14).

2.8 Design Data Required for Projects Involving FEMA Floodplains

2.8.1 Publications

1. FEMA Flood Insurance Studies

   NOTE: The Internet address for FEMA is http://www.fema.gov/

2.8.2 Maps

1. Flood Insurance Rate Maps (FIRM)
2. Flood Hazard Boundary Maps (FHBM)
3. Flood Boundary and Floodway Maps (FBFM
4. Digital Flood Insurance Rate Maps (DFIRM)

5. Detailed study workmaps. These are large-scale topographic maps annotated with cross-section locations, floodplain limits, and floodway boundaries from detailed hydraulic studies.

2.8.3 Survey Data, Plans, Reports

1. All data specified on the Hydraulic Engineering Field Report. This report contains a detailed listing of the minimum survey data that is required (see Appendix A in Chapter 14). The hydraulic engineer shall determine the extent of survey data required to accurately model the project site.
2. CAiCE survey files.
3. Existing bridge and roadway plans.
4. Three sets of preliminary proposed roadway plans.

2.8.4 Regulations and Policy Guides

1. Federal-Aid Policy Guide, NS 23 CFR 650A, "Procedures for Coordinating Highway Encroachments on Floodplains with Federal Emergency Management Agency (FEMA)." See Appendix A in this chapter.
2. The National Flood Insurance Program regulations (44 CFR Parts 59-78). Available for download at http://www.fema.gov/fhm/en_reg.shtm.

2.8.5 Computer Models and Manuals

1. *HEC-2, Water Surface Profiles*, User's Manual dated 1991, U.S. Army Corps of Engineers.

2. *HEC-RAS, River Analysis System,* User's Manual; Hydraulic Reference Manual; and Applications Guide dated 2002, U.S. Army Corps of Engineers. Available for download at http://www.hec.usace.army.mil.

2.9 Design Methods/Procedures for all Encroachments

2.9.1 Step-By-Step Instructions

1. Confirm whether the stream reach in question is within a FEMA mapped area. If so, determine whether a detailed Flood Insurance Study (FIS) has been performed and a regulatory floodway delineated.

2. For sites within regulatory floodways, obtain the latest copies of the Flood Insurance Study and maps. If it can be determined by use of the FIS and maps that the proposed construction will not encroach on the existing regulatory floodway, or, for very insignificant bridge widenings or culvert extensions, such as safety widenings, which place very little additional fill within the floodplain/floodway, the affected Community will be notified as specified in Section 2.7.2, paragraph 1. If the extent of floodway encroachment cannot be determined, or if it is not practical to span the floodway, a copy of the latest effective floodway computer model shall be obtained. The computer model may be obtained from the FEMA study contractor or FEMA.

3. The effective floodway computer model, usually HEC-2, should be run and compared to the effective floodway data published in the FIS. FEMA now encourages the use of HEC-RAS, even where the effective FEMA model is a HEC-2 model. Since HEC-RAS is generally superior to HEC-2 in modeling bridges and culverts, the modeler should usually import a HEC-2 model into HEC-RAS and use HEC-RAS for the subsequent modeling effort. HEC-RAS has automated routines for importing a HEC-2 model. Once the import has been made, the modeler must check the imported bridge data and will usually need to do significant bridge data editing inside HEC-RAS before the model is ready to run. This is especially true when the HEC-2 model has a large number of bridges and other hydraulic structures. If the effort of editing the imported model to make a working HEC-RAS model would be unjustifiably high, for example when the model has several existing bridges, and the existing and proposed bridges are suitably modeled by the Normal Bridge routine in HEC-2, then the modeling effort may be performed in HEC-2 for FEMA coordination purposes.

   When using HEC-RAS to replace a HEC-2 effective model, the modeler should document and explain any significant differences between the two models. Bridges are a common cause of differences between results from HEC-RAS and HEC-2.

4. If the effective floodway computer model, as received, does not match the published floodway widths and the base flood profile and floodway elevations, and/or if obvious technical/input errors are found in the model then the following steps must be taken:

   a. The published floodway boundaries and widths should be matched if they appear to be reasonable. These boundaries are established by zoning ordinances under the jurisdiction of the local Community and affect the flood insurance rates and property development rights of local property owners. To do this, HEC-2 or HEC-RAS encroachment method 1 should be used. This method holds the floodway location by exact station and allows the water surface profile to vary.

   b. Correct any obvious technical/input errors in the model as received. Note: It is not the GDOT's responsibility to correct and/or update FEMA's floodway model. For this reason, only obvious technical/ input errors that directly affect our project site will be corrected.

   c. Add additional unconstricted floodplain cross sections, as required, that will reflect the existing conditions at the proposed construction site. These cross sections are normally located at the upstream and downstream face of the proposed construction, as well as the exit and approach sections.

5. Run this corrected/modified effective model. This is the corrected effective floodway run. Compare the corrected effective floodway run to the effective/published floodway boundaries, widths and elevations. Any changes in the floodway are due to conditions other than the proposed construction. It is possible that the floodway elevations in the corrected effective run will reflect an increase of more than 1 foot from the effective base flood profile.

6. Modify the corrected effective floodway model to reflect the proposed construction. The new drainage structure should be sized for as small of an effect as practical on the existing regulatory floodway widths and elevations. A "No-Rise" condition is desirable. This computer model is the proposed floodway run.

7. Model the 10-, 50-, 100-, and 500-year flood profiles for the effective, corrected effective, and proposed conditions.

8. Compare the proposed floodway run to the corrected effective floodway run. This will reflect any changes in the floodway due to the proposed construction.

9. If the effective/published floodway is not being changed, then the affected Community shall be notified as specified in Section 2.7.2, paragraph 2.

10. If the effective/published floodway is being changed due to conditions other than the proposed construction, then the affected Community shall be provided with this information, including the supporting documentation as specified in Section 2.7.2, paragraph 2 and Section 2.8.2. The affected Community is responsible for submitting a "Letter of Map Revision" (LOMR) request to FEMA. After completion of construction, the community should also submit a LOMR request to FEMA to permanently change the FIRM.

11. If the effective/published floodway is being changed due to the proposed construction, then the affected Community and FEMA shall be provided with this information, including the supporting documentation as specified in Section 2.6.2, paragraph 3 and Section 2.9.2. If the affected Community agrees with the proposed changes in the floodway, the Community is then responsible for submitting a "Conditional Letter of Map Revision" (CLOMR) request to FEMA.

2.9.2 Required Supporting Documentation

- Copy of the effective HEC-2 computer floodway run.
- Copy of the effective HEC-2 computer run with the 10-, 50-, 100-, and 500-year highwater profiles without floodway encroachments.
- Copy of the HEC-2 or HEC-RAS corrected effective computer floodway run using the effective floodway data with any required modifications/additions.
- Copy of the HEC-2 or HEC-RAS corrected effective computer run showing the 10-, 50-, 100-, and 500-year highwater profiles without floodway encroachments using the modified data.
- Copy of the HEC-2 or HEC-RAS proposed computer floodway run.
- Copy of the HEC-2 or HEC-RAS proposed computer run for the 10-, 50-, 100-, and 500-year highwater profiles without floodway encroachments.
- **Note: Three computer disks with the required HEC-2 or HEC-RAS computer runs shall be provided if done by a consultant.**
- Copy of the published floodway map and the published highwater profiles. The revised floodway boundaries, if any, should be shown on the floodway map.
- Floodway data tables showing the effective, corrected effective, and proposed conditions.
- Detailed explanation of the results of the floodway calculations.
- Set of the proposed roadway plans and the preliminary bridge layout.
- **This documentation must be stamped and signed by a registered Professional Engineer if done by a consultant.**

2.10 Consultant Responsibilities in Projects Involving FEMA

For sites located within a FEMA regulatory floodway, the Consultant is responsible for sizing a drainage structure that meets the standards and approval of GDOT, the affected Community and FEMA. The Consultant shall provide the necessary forms, floodway and flood profile computer runs, and other supporting documentation as required for approval.

Note: The Consultant may be required, at the Department's discretion, to coordinate directly with the affected Community and/or FEMA as necessary. All supporting documentation, along with copies of correspondence and approvals from the Community and FEMA shall be provided to the GDOT for our records and use.

For State Aid projects, where the Consultant has done a hydraulic study for the Community, the Consultant, at a minimum, shall provide the GDOT with a copy of a Letter of Concurrence from the Community and approval from FEMA (if required).

2.11 Revisions to NFIP Maps

FEMA has established administrative procedures for changing or correcting effective FIRMs and Flood Insurance Study (FIS) reports based on new or revised technical data. A physical change to the affected FIRM panels and portions of the FIS report is referred to as a Physical Map Revision (PMR).

A PMR is an official republication of a Community's NFIP map to effect changes to base flood elevations, floodplain boundary delineations, regulatory floodways and planimetric features. These changes typically occur as a result of structural works or improvements, annexations resulting in additional flood hazard areas, or corrections to base flood elevations or Special Flood Hazard Areas (SFHAs).

Changes to NFIP maps may also be made by a Letter of Map Change (LOMC). The three LOMC categories are described below:

- LETTER OF MAP AMENDMENT (LOMA). A LOMA is an official revision by letter to an effective NFIP map. A LOMA results from an administrative procedure that involves the review of scientific or technical data submitted by the owner or lessee of property who believes that the property has incorrectly been included in a designated SFHA. A LOMA amends the currently effective FEMA map and establishes that a specific property is not located in an SFHA.

- LETTER OF MAP REVISION BASED ON FILL (LOMR-F). A LOMR-F is an official revision by letter to an effective NFIP map. A LOMR-F states FEMA's determination concerning whether a structure or parcel has been elevated on fill above the base flood elevation and is, therefore, excluded from the SFHA.

- LETTER OF MAP REVISION (LOMR). A LOMR is an official revision to the currently effective FEMA map. It is used to change flood zones, floodplain and floodway delineations, flood elevations and planimetric features. All requests for LOMRs should be made to FEMA through the chief executive officer of the Community, because it is the community that must adopt any changes and revisions to the map. If the request for a LOMR is not submitted through the chief executive officer of the Community, evidence must be submitted that the Community has been notified of the request.

2.11.1 Conditional Letter of Map Revision (CLOMR)

NFIP maps must be based on existing, rather than proposed, conditions. Because flood insurance is a financial protection mechanism for real-property owners and lending institutions against existing hazards, flood insurance ratings must be made accordingly. However, communities, developers and property owners often undertake projects that may alter or mitigate flood hazards and would like FEMA's comment before constructing them. A CLOMR is FEMA's formal review and comment on whether a proposed project complies with the minimum NFIP floodplain management criteria. If it is determined that it does, the CLOMR also describes any eventual revisions that will be made to the NFIP maps upon completion of the project.

Obtaining conditional approval is not automatically required by NFIP regulations for all projects in the floodplain. A CLOMR is required only for those projects that will result in an increase in the water surface elevation greater than 1 foot for the 100-year flood for streams with base flood elevations specified but no floodway designated. A CLOMR is also required for any proposed construction within a regulatory floodway that will result in an increase in the water surface elevation for the base flood. Note that a CLOMR may also be necessary if there is a decrease in flood elevations, which would allow the community to build in areas previously not allowed. The technical data needed to support a CLOMR request generally involve detailed hydrologic and hydraulic analyses and are similar to the data needed for a LOMR request. When the proposed construction is completed, a LOMR request should be made.

A request for a CLOMR by a private individual, including homeowners and land developers, or by any public agency, must be made through the local Community participating in the NFIP. The following are reasons why the CLOMR request is made through the Community:

- Community must be aware of changes by the proposed project and determine if they are consistent with local ordinances.
- Community will collect fees for FEMA that apply to requests for map revisions.
- Community must determine that the existing FIRM is not accurate and that the hydrologic and/or hydraulic information should be updated as proposed in the CLOMR request.

References

1. AASHTO, 1999. Model Drainage Manual, Chapter 2, "Legal Aspects," Task Force on Hydrology and Hydraulics.

2. AASHTO, Highway Drainage Guidelines, Chapter 5, 2003. "The Legal Aspects of Highway Drainage," Task Force on Hydrology and Hydraulics.

APPENDIX - CHAPTER 2

Appendix A - Federal-Aid Policy Guide
Appendix B – FEMA Floodway Encroachment Figure
Appendix C – Sample FEMA Floodway Map
Appendix D – Sample FEMA Floodway Table
Appendix E – FEMA's Professional Engineer Certification Form
Appendix F – Sample No-Rise Certification Letter
Appendix G – Sample Letters to the Community and FEMA

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2.12 APPENDIX A – Federal-Aid Policy Guide

FEDERAL-AID POLICY GUIDE
September 30, 1992, Transmittal 5
NS 23 CFR 650A
Attachment 2

NON-REGULATORY SUPPLEMENT ATTACHMENT

OPI:HNG-31

PROCEDURES FOR COORDINATING HIGHWAY ENCROACHMENTS ON FLOODPLAINS WITH FEDERAL EMERGENCY MANAGEMENT AGENCY (FEMA)

The local community with land use jurisdiction, whether it is a city, county, or State, has the responsibility for enforcing National Flood Insurance Program (NFIP) regulations in that community if the community is participating in the NFIP. Most NFIP communities have established a permit requirement for all development within the base (100 year) floodplain. Consistency with NFIP standards is a requirement for Federal-aid highway actions involving regulatory floodways. The community, by necessity, is the one who must submit proposals to FEMA for amendments to NFIP ordinances and maps in that community should it be necessary. Determination of the status of a community's participation in the NFIP and review of applicable NFIP maps and ordinances are, therefore, essential first steps in conducting location hydraulic studies and preparing environmental documents.

Where NFIP maps are available, their use is mandatory in determining whether a highway location alternative will include an encroachment on the base floodplain. Three types of NFIP maps are published: (1) a Flood Hazard Boundary Map (FHBM), (2) a Flood Boundary and Floodway Map (FBFM), and a Flood Insurance Rate Map (FIRM). A FHBM is generally not based on a detailed hydraulic study and, therefore, the floodplain boundaries shown are approximate. A FBFM, on the other hand, is generally derived from a detailed hydraulic study and should provide reasonably accurate information. The hydraulic data from which the FBFM was derived is available through the regional office of FEMA. This is normally in the form of computer input data cards for calculating water surface profiles. The FIRM is generally produced at the same time using the same hydraulic model and has appropriate rate zones and base flood elevations added.

Communities in the regular program of the NFIP generally have had detailed flood insurance studies performed. In these communities the NFIP map will be a FIRM and in the majority of cases, a regulatory floodway is in effect.

Communities in the emergency program of the NFIP usually have not had a detailed flood insurance study completed and, usually, only limited floodplain data is available. In this case the community NFIP map will be a FHBM and there will not be a regulatory floodway.

Other possibilities are: (1) the community is not in a FEMA identified flood hazard area and thus there is no NFIP map, (2) a FHBM, FIRM, or FBFM is available but the community is not participating in the NFIP, (3) a community is in the process of converting from the emergency program to the regular program and a detailed flood insurance study is underway, or (4) a community is participating in the regular program, the NFIP map is a FIRM, but no regulatory floodway has been established. Information on community participation in the NFIP is provided in the "National Flood Insurance Program Community Status Book" which is published bi-monthly for each State and is available through the Headquarters of FEMA.

Coordination With FEMA

It is intended that there should be highway agency coordination with FEMA in situations where administrative determinations are needed involving a regulatory floodway or where flood risks in NFIP communities are significantly impacted. The circumstances which would ordinarily require coordination with FEMA are:

1. A proposed crossing encroaches on a regulatory floodway and, as such, would require an amendment to the floodway map,

2. A proposed crossing encroaches on a floodplain where a detailed study has been performed but no floodway designated and the maximum 1 foot increase in the base flood elevation would be exceeded,

3. A local community is expected to enter into the regular program within a reasonable period and detailed floodplain studies are underway,

4. A local community is participating in the emergency program and base flood elevation in the vicinity of insurable buildings is increased by more than 1 foot. (Where insurable buildings are not affected, it is sufficient to notify FEMA of changes to base flood elevations as a result of highway construction.)

The draft EIS/EA should indicate the NFIP status of affected communities, the encroachments anticipated and the need for floodway or floodplain ordinance amendments. Coordination means furnishing to FEMA the draft EIS/EA and, upon selection of an alternative, furnishing to FEMA through the community a preliminary site plan and water surface elevation information and technical data in support of a floodway revision request as required. If a determination by FEMA would influence the selection of an alternative, a commitment from FEMA should be obtained prior to the FEIS or FONSI. Otherwise this later coordination may be postponed until the design phase.

For projects that will be processed with a categorical exclusion, coordination may be carried out during design. However, the outcome of the coordination at this time could change the class of environmental processing.

Highway Encroachments Which Are Consistent With Regulatory Floodways In Effect

In many situations it is possible to design and construct highways in a cost-effective manner such that their components are excluded from the floodway. This is the simplest way to be consistent with the standards and should be the initial alternative evaluated. If a project element encroaches on the floodway but has a very minor effect on the floodway water surface elevation (such as piers in the floodway), the project may normally be considered as

being consistent with the standards if hydraulic conditions can be improved so that no water surface elevation increase is reflected in the computer printout for the new conditions.

Revision of Regulatory Floodway So That Highway Encroachment Would Be Consistent

Where it is not cost-effective to design a highway crossing to avoid encroachment on an established floodway, a second alternative would be a modification of the floodway itself. Often, the community will be willing to accept an alternative floodway configuration to accommodate a proposed crossing provided NFIP limitations on increases in the base flood elevation are not exceeded. This approach is useful where the highway crossing does not cause more than a 1 foot rise in the base flood elevation. In some cases, it may be possible to enlarge the floodway or otherwise increase conveyance in the floodway above and below the crossing in order to allow greater encroachment. Such planning is best accomplished when the floodway is first established. However, where the community is willing to amend an established floodway to support this option, the floodway may be revised.

The responsibility for demonstrating that an alternative floodway configuration meets NFIP requirements rests with the community. However, this responsibility may be borne by the agency proposing to construct the highway crossing. Floodway revisions must be based on the hydraulic model which was used to develop the currently effective floodway but updated to reflect existing encroachment conditions. This will allow determination of the increase in the base flood elevation that has been caused by encroachments since the original floodway was established. Alternate floodway configurations may then be analyzed.

Base flood elevation increases are referenced to the profile obtained for existing conditions when the floodway was first established.

Data submitted to FEMA in support of a floodway revision request should include:

1. Copy of current regulatory Flood Boundary Floodway Map, showing existing conditions, proposed highway crossing and revised floodway limits.

2. Copy of computer printouts (input, computation, and output) for the current 100-year model and current 100-year floodway model.

3. Copy of computer printouts (input, computation, and output) for the revised 100-year floodway model. Any fill or development that has occurred in the existing flood fringe area must be incorporated into the revised 100-year floodway model.

4. Copy of engineering certification is required for work performed by private subcontractors.

The revised and current computer data required above should extend far enough upstream and downstream of the floodway revision area in order to tie back into the original floodway and profiles using sound hydraulic engineering practices. This distance will vary depending on the magnitude of the requested floodway revision and the hydraulic characteristics of the stream.

A floodway revision will not be acceptable if development that has occurred in the existing flood fringe area since the adoption of the community's floodway ordinance will now be located within the revised floodway area unless adversely affected adjacent property owners are compensated for the loss.

If the input data representing the original hydraulic model is unavailable, an approximation should be developed. A new model should be established using the original cross-section topographic information, where possible, and the discharges contained in the Flood Insurance Study which establish the original floodway. The model should then be run confining the effective flow area to the currently established floodway and calibrate to reproduce within 0.10 foot, the "With Floodway" elevations provided in the Floodway Data Table for the current floodway. Floodway revisions may then be evaluated using the procedures outlined above.

Floodway Encroachment Where Demonstrably Appropriate

When it would be demonstrably inappropriate to design a highway crossing to avoid encroachment on the floodway and where the floodway cannot be modified such that the structure could be excluded, FEMA will approve an alternate floodway with backwater in excess of the 1 foot maximum only when the following conditions have been met:

1. A location hydraulic study has been performed in accordance with "Location and Hydraulic Design of Encroachments on Floodplains" (23 CFR 650, Subpart A) and FHWA finds the encroachment is the only practicable alternative.

2. The constructing agency has made appropriate arrangements with affected property owners and the community to obtain flooding easements or otherwise compensate them for future flood losses due to the effects of the structure.

3. The constructing agency has made appropriate arrangements to assure that the National Flood Insurance Program and Flood Insurance Fund do not incur any liability for additional future flood losses to existing structures which are insured under the Program and grandfathered in under the risk status existing prior to the construction of the structure.

4. Prior to initiating construction, the constructing agency provides FEMA with revised flood profiles, floodway and floodplain mapping, and background technical data necessary for FEMA to issue revised Flood Insurance Rate Maps and Flood Boundary and Floodway Maps for the affected area upon completion of the structure.

Highway Encroachment On A Floodplain With A Detailed Study (FIRM) In communities where a detailed flood insurance study has been performed but no regulatory floodway designated, the highway crossing should be designed to allow no more than a 1 foot increase in the base flood elevation based on technical data from the flood insurance study. Technical data supporting the increased flood elevation should be submitted to the local community and FEMA for their files. Where it is demonstrably inappropriate to design the highway crossing and meet backwater limitations the procedures outlined under:

Floodway Encroachment Where Demonstrably Appropriate should be followed in requesting a revision of base floodplain reference elevations.

Highway Encroachment On A Floodplain Indicated On An FHBM

In communities where detailed flood insurance studies have not been performed, the highway agency must generate its own technical data to determine the base floodplain elevation and design encroachments in accordance with 23 CFR 650A. Base floodplain elevations should be furnished to the community, and coordination carried out with FEMA as

outlined previously where the increase in base flood elevations in the vicinity of insurable buildings exceeds 1 foot.

Highway Encroachment On Unidentified Floodplains
Encroachments which are outside of NFIP communities or NFIP identified flood hazard areas should be designed in accordance with 23 CFR 650A of the Federal Highway Administration. The NFIP identified flood hazard areas are those delineated on an FHBM, FBFM or FIRM.

To Obtain FEMA Publications

1. National Flood Insurance Program Community Status Book

Write to FEMA, 500 "C" Street, SW., Room 431, Insurance Operations, Washington, D.C. 20472 and request to be placed on the appropriate State mailing list.

2. Flood Insurance Study Report and/or FBFM
Write to FEMA, 500 "C" Street, SW., State and Local Programs Room 418, Washington, D.C. 20472 request:

(a) For future studies,

To be placed on mailing list to receive all studies and maps as they are completed for a State.

(b) For completed studies,

(1) The study for a particular community (provide number).

(2) All the studies for a particular State. You will receive about 50% of the completed studies to date.

3. FHBM or FIRM for a particular community with ID number,

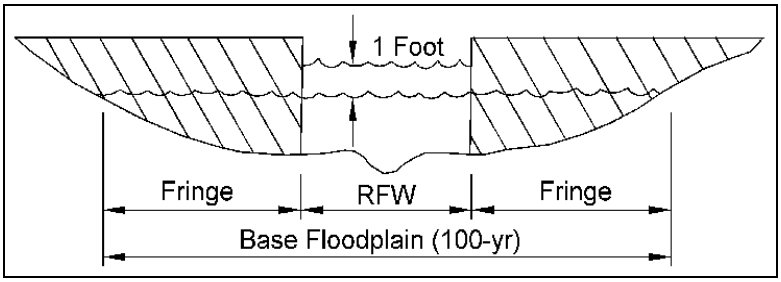
(a) Call NFIP contractor (800) 638-6620, (800) 492-6605(MD), 897-5900 in D.C., or

(b) Write NFIP, P.O. Box 34604, Bethesda, Maryland 20034.

Briefing FHWA/FEMA Coordination Procedures

The procedures divide highway encroachments on floodplains into six categories:

1. Consistent with a Regulatory Floodway (RFW)
   a. Applicable to 5,000 communities (county or city) which are in the FEMA regular flood insurance program
   b. Community prohibits development in RFW, but allows development that is flood proofed in fringe



   c. Highways are consistent by not increasing backwater
      (1) Bridging RFW and
      (2) Excluding fill from RFW

2. Consistent by Revision of RFW
   a. Same as 1
   b. Same as 1
   c. Same as 1
   d. If community and FEMA agree, RFW can be shifted

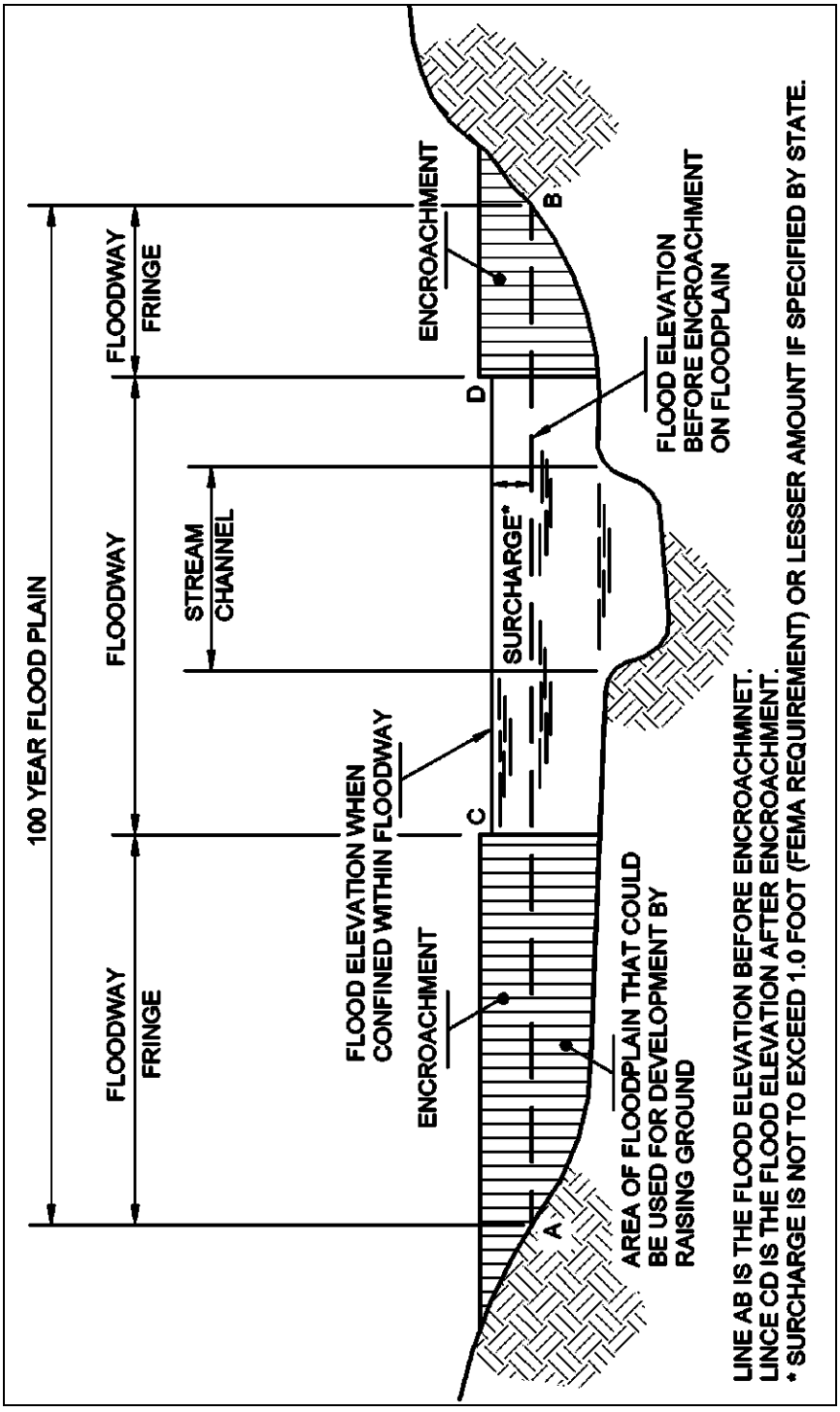
3. On RFW where demonstrably appropriate
   a. Same as 1
   b. Same as 1
   c. Highways can increase backwater if:
      (1) Little or no risk to development can be demonstrated, and
      (2) Community and FEMA concur

4. On floodplain shown on Flood Insurance Rate Map (FIRM)
   a. Applicable to 2,000 communities in regular insurance program
   b. No RFW has been developed, but flood elevations have
   c. Community controls development within FIRM
   d. Highway encroachment should cause less than 1 foot of backwater

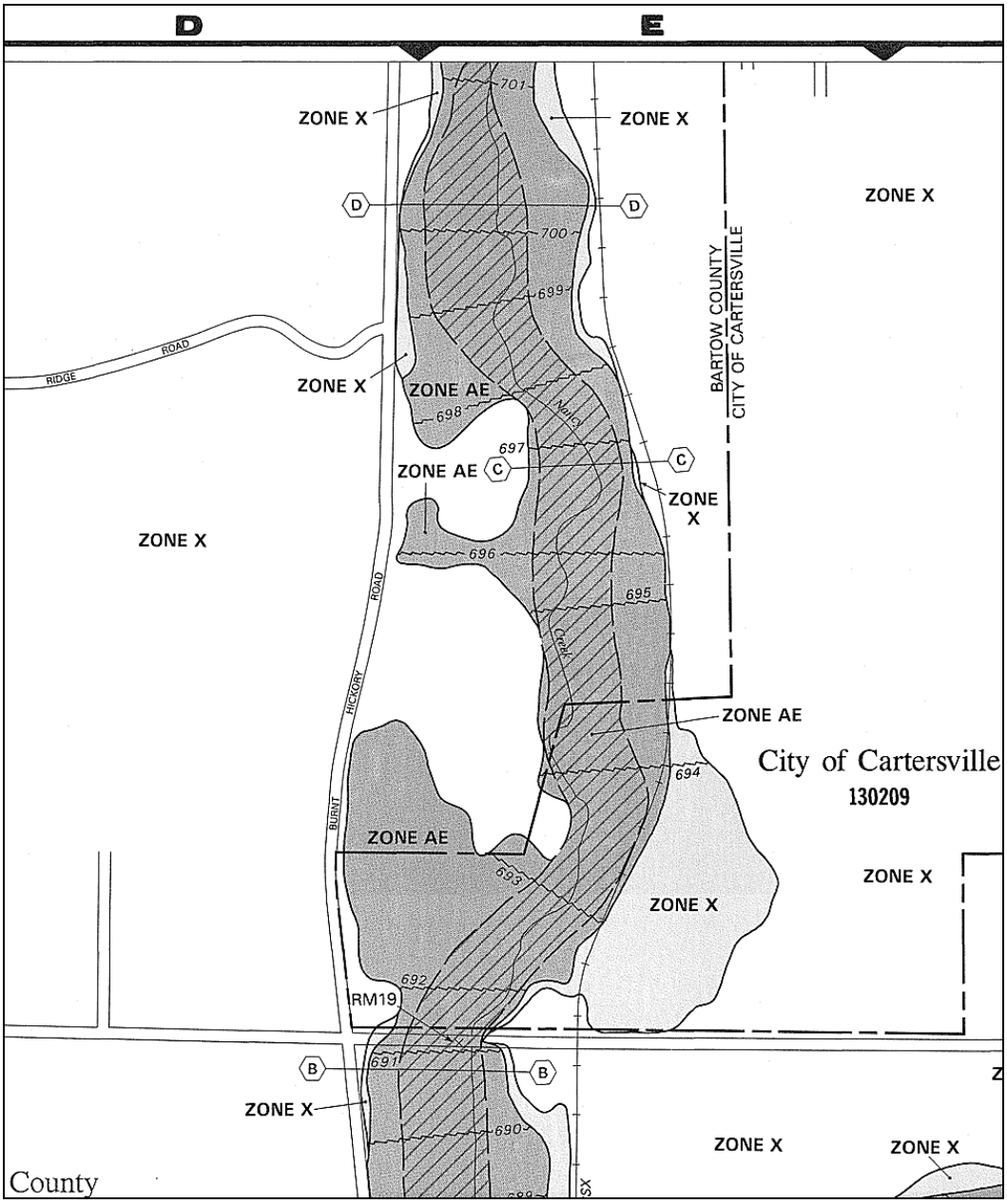
5. On floodplain shown on Flood Hazard Boundary Map (FHBM)
   a. Applicable to 13,000 communities, 10,000 in emergency insurance program
   b. No RFW or flood elevations have been developed
   c. Community controls development within FHBM
   d. Highway encroachment should cause less than 1 foot of backwater if insurable buildings are present

6. On unidentified floodplains
   a. Floodplain is not shown on FIRM or FHBM
   b. Floodplain is therefore outside of the 20,000 flood prone areas in the U.S. that are of concern of FEMA
   c. Apply FHPM 6-7-3-2, Location and Hydraulic Design of Encroachments on Floodplains

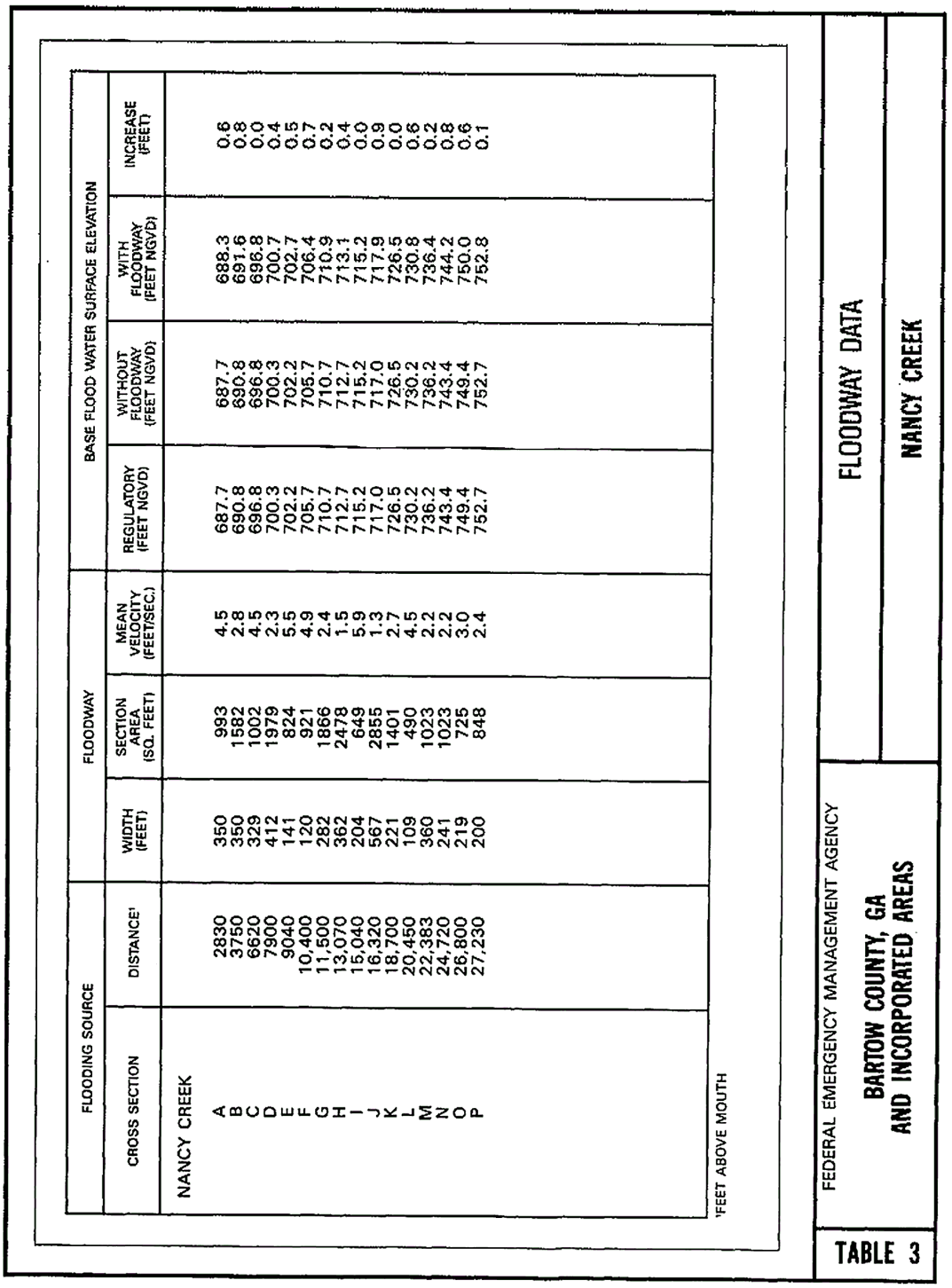
2.13 APPENDIX B - FEMA Floodway Encroachment Figure



2.14 APPENDIX C – Sample FEMA Floodway Map



2.15 APPENDIX D – Sample FEMA Floodway Table



FEDERAL EMERGENCY MANAGEMENT AGENCY

BARTOW COUNTY, GA
AND INCORPORATED AREAS

FLOODWAY DATA

NANCY CREEK

TABLE 3

FLOODING SOURCE		FLOODWAY			BASE FLOOD WATER SURFACE ELEVATION			
CROSS SECTION	DISTANCE[1]	WIDTH (FEET)	SECTION AREA (SQ. FEET)	MEAN VELOCITY (FEET/SEC.)	REGULATORY (FEET NGVD)	WITHOUT FLOODWAY (FEET NGVD)	WITH FLOODWAY (FEET NGVD)	INCREASE (FEET)
NANCY CREEK								
A	2830	350	993	4.5	687.7	687.7	688.3	0.6
B	3750	350	1582	2.8	690.8	690.8	691.6	0.8
C	6620	329	1002	4.5	696.8	696.8	696.8	0.0
D	7900	412	1979	2.3	700.3	700.3	700.7	0.4
E	9040	141	824	5.5	702.2	702.2	702.7	0.5
F	10,400	120	921	4.9	705.7	705.7	706.4	0.7
G	11,500	282	1866	2.4	710.7	710.7	710.9	0.2
H	13,070	362	2478	1.5	712.7	712.7	713.1	0.4
I	15,040	204	649	5.9	715.2	715.2	715.2	0.0
J	16,320	567	2855	1.3	717.0	717.0	717.9	0.9
K	18,700	221	1401	2.7	726.5	726.5	726.5	0.0
L	20,450	109	490	4.5	730.2	730.2	730.8	0.6
M	22,383	360	1023	2.2	736.2	736.2	736.4	0.2
N	24,720	241	1023	2.2	743.4	743.4	744.2	0.8
O	26,800	219	725	3.0	749.4	749.4	750.0	0.6
P	27,230	200	848	2.4	752.7	752.7	752.8	0.1

[1]FEET ABOVE MOUTH

2.16 APPENDIX E - FEMA'S Professional Engineer Certification Form

FEDERAL EMERGENCY MANAGEMENT AGENCY **CERTIFICATION BY REGISTERED PROFESSIONAL ENGINEER AND/OR LAND SURVEYOR FORM**	FEMA USE ONLY	O.M.B. No. 3067-0148 Expires July 31, 1997

PUBLIC BURDEN DISCLOSURE NOTICE

Public reporting burden for this form is estimated to average .23 hour per response. The burden estimate includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the needed data, and completing and reviewing the form. Send comments regarding the accuracy of the burden estimate and any suggestions for reducing this burden, to: Information Collections Management, Federal Emergency Management Agency, 500 C Street, S.W., Washington, DC 20472.

You are not required to respond to this collection of information unless a valid OMB Control Number is displayed in the upper right corner of this form.

1. This certification is in accordance with 44 CFR Ch. I, Section 65.2

2. I am licensed with expertise in _____
[example: water resources (*hydrology, hydraulics, sediment transport, interior drainage*)* structural, geotechnical, land surveying.]

3. I have _____ years experience in the expertise listed above.

4. I have ☐ prepared ☐ reviewed the attached supporting data and analyses related to my expertise.

5. I ☐ have ☐ have not visited and physically viewed the project.

6. In my opinion, the following analyses and/or designs, is/are being certified:

_____

7. Based on the following review, the modifications in place have been constructed in general accordance with plans and specifications.

Basis for above statement: (check all that apply)

a. ☐ Viewed all phases of actual construction.
b. ☐ Compared plans and specifications with as-built survey information.
c. ☐ Examined plans and specifications and compared with completed projects.
d. ☐ other (*Specify*) _____

8. All information submitted in support of this request is correct to the best of my knowledge. I understand that any false statement may be punishable by fine or imprisonment under Title 18 of the United States Code, Section 1001.

Name: _____
(please print or type)

Title: _____
(please print or type)

Registration No. _____ Expiration Date: _____

State _____

Type of License _____

_____
Signature

_____
Date

Seal
(Optional)

*Specify Subdiscipline
Note: Insert not applicable (N/A) if statement does not apply.

PLEASE REFER TO THE INSTRUCTIONS FOR THE APPROPRIATE MAILING ADDRESS

FEMA Form 81-89A, May 96 Certification by Registered Professional Engineer and/or Land Surveyor Form MT-2 Form 2

2.17 APPENDIX F – Sample No-Rise Certification Letter

Engineering "No-Rise" Certification

Chattahoochee River

Bridge Replacement

CS 613

White County, Georgia

This is to certify that I am a duly qualified engineer licensed to practice in the State of Georgia. It is to further certify that the attached technical data supports the fact that the proposed construction of the Replacement Bridge over the Chattahoochee River will not create any increase to the 100-Year flood elevations, floodway elevations, and floodway widths on the Chattahoochee River at published sections in the Preliminary Flood Insurance Study for the City of Helen, Georgia, dated October 3, 1983 and will not create any increase in 100-year flood and floodway elevations and floodway widths at unpublished cross-sections in the vicinity of the project.

DATE SIGNATURE

SEAL:

2.18 APPENDIX G – Sample Letters to the Community and FEMA

GEORGIA DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
NO. 2 CAPITOL SQUARE, S.W.
ATLANTA, GA 30334-1002

(DATE)

Project _____
PI No. _____

(Name)
City or County Manager/Engineer (Note: The appropriate Community official varies)
(Address)

Dear _____,

This project consists of the replacement of the existing 24 ft wide by 60 ft long bridge on _____ over _____ with parallel 38 ft wide by 100 ft long bridges. This site crosses the regulatory floodway established for _____ located in Unincorporated _____ County.

The required HEC-2 models along with supporting technical data for the proposed project is included in the attached documentation. The results show that the proposed construction will not increase the floodway widths or elevations from the existing conditions.

Included in this documentation for your use and files are:

1. A floodway map showing the location of the proposed site;
2. Tables showing the results of the floodway calculations;
3. A detailed explanation of the floodway calculations;
4. A preliminary bridge layout;
5. A set of roadway plans;
6. Hard copies of the required HEC-2 models; and
7. A computer disk with the required HEC-2 models.

The proposed bridge construction is consistent with the regulatory floodway at this site since the proposed construction will not increase the floodway widths or elevations from the existing conditions. In accordance with Section NS 23 CFR 650A of the Federal-Aid Policy Guide, coordination with FEMA will not be required.

A letter of concurrence from your community is required since this project crosses a regulatory floodway. Please review the enclosed information and send your letter of concurrence to this office at your earliest convenience.

This project is presently scheduled to be let to construction in _____. If you have any questions and/or comments, please contact _____ of the _____ Office at telephone number _____.

Attachments
cc:

GEORGIA DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
NO. 2 CAPITOL SQUARE, S.W.
ATLANTA, GA 30334-1002

(DATE)

Project _____
PI No. _____

(Name)
City or County Manager/Engineer (Note: The appropriate Community official varies)
(Address)

Dear _____,

This project consists of the replacement of the existing 24 ft wide by 60 ft long bridge on _____ over _____ with a 38 ft wide by 130 ft long bridge. This site crosses the regulatory floodway established for _____ located in Unincorporated _____ County. The proposed bridge does not encroach horizontally or vertically on the existing regulatory floodway at this site.

Included in this documentation for your use and files are:

A floodway map showing the location of the proposed site;
The published floodway tables for the stream reach;
A preliminary bridge layout; and
A set of roadway plans.

Since the regulatory floodway width of 60 ft at the crossing site is cleared by the toe of endroll to toe of endroll width of the proposed 130 ft long bridge, and the 100-year floodway elevation is cleared by the proposed superstructure, there is no encroachment on the existing regulatory floodway.

The proposed bridge construction is consistent with the regulatory floodway at this site due to the bridging and excluding of fill from the existing floodway. In accordance with Section NS 23 CFR 650A of the Federal-Aid Policy Guide, coordination with FEMA will not be required.

A letter of concurrence from your community is required since this project crosses a regulatory floodway. Please review the enclosed information and send your letter of concurrence to this office at your earliest convenience.

This project is presently scheduled to be let to construction in _____. If you have any questions and/or comments, please contact _____ of the _____ Office at telephone number _____.

Attachments
cc:

GEORGIA DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
NO. 2 CAPITOL SQUARE, S.W.
ATLANTA, GA 30334-1002

(DATE)

Project _____
PI No. _____

(Name)
City or County Manager/Engineer (Note: The appropriate Community official varies)
(Address)

Dear _____,

This project consists of the replacement of the existing 24 ft wide by 60 ft long bridge on _____ over _____ with a 38 ft wide by 130 ft long bridge. This site crosses the regulatory floodway established for _____ located in Unincorporated _____ County.

Due to several errors in the original _____floodway run, several of the Flood Insurance Study published widths and elevations were found to be incorrect. Corrections to the original floodway model, along with the addition of four surveyed cross sections at the project site yielded the base floodway run. The proposed bridge and roadway were then inserted into the base floodway run, yielding the proposed floodway model. The results show that the proposed construction does not increase the floodway widths or elevations from the base run (corrected existing conditions).

Included in this documentation for your use and files are:

1. A floodway map showing the location of the proposed site and the corrected floodway;
2. The published floodway tables for the stream reach;
3. Tables showing the results of the floodway calculations;
4. A detailed explanation of the floodway calculations;
5. A preliminary bridge layout;
6. A set of roadway plans;
7. Hard copies of the required floodway models; and
8. A computer disk with the required floodway models.

As stated above, the results show that the published existing floodway is incorrect due to technical errors in the original model. The proposed bridge construction is consistent with the corrected regulatory floodway at this site since the proposed construction will not increase the floodway widths or elevations from the corrected existing conditions (base run). Since the proposed construction will have no impacts on the corrected existing floodway widths and elevations, in accordance with Section NS 23 CFR 650A of the Federal-Aid Policy Guide, GDOT coordination with FEMA will not be required.

A letter of concurrence from your community is required since this project crosses a regulatory floodway. Please review the enclosed information and send your letter of concurrence to this office at your earliest convenience.

This project is presently scheduled to be let to construction in _____. If you have any questions and/or comments, please contact _____ of the _____ Office at telephone number _____.

Attachments
cc:

GEORGIA DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
NO. 2 CAPITOL SQUARE, S.W.
ATLANTA, GA 30334-1002

(DATE)

Project _____
PI No. _____

(Name)
City or County Manager/Engineer (Note: The appropriate Community official varies)
(Address)

Dear _____,

This project consists of the replacement of the existing 24 ft wide by 60 ft long bridge on _____ over _____ with a 38 ft wide by 130 ft long bridge. This site crosses the regulatory floodway established for _____ located in Unincorporated _____ County.

The proposed construction at this site increases the floodway elevations at published sections A, B and C in excess of 0.1 ft. This construction does not cause more than a 1.0 ft rise in the existing 100-year base flood elevation. The existing floodway width at section B is increased from 150 to 200 ft.

Included in this documentation for your use and files are:

1. Floodway map showing the location of the proposed site and the corrected floodway
2. Published floodway tables for the stream reach
3. Tables showing the results of the floodway calculations
4. Detailed explanation of the floodway calculations
5. Preliminary bridge layout
6. Set of roadway plans
7. Hard copies of the required floodway models
8. Computer disk with the required floodway models

Please review the enclosed documentation, and if acceptable, a letter of concurrence from your community is required since this project crosses a regulatory floodway. Please send your letter of concurrence to the Federal Emergency Management Agency with a copy to this office at your earliest convenience. FEMA's address is listed below:

_____, Regional Director
Federal Emergency Management Agency
Region IV
Mitigation Division
3003 Chamblee-Tucker Road
Atlanta, Georgia
Attn: (Regional Analyst)

This project is presently scheduled to be let to construction in _____. If you have any questions and/or comments, please contact _____ of the _____ Office at telephone number _____.

Attachments
cc:

GEORGIA DEPARTMENT OF TRANSPORTATION
STATE OF GEORGIA
NO. 2 CAPITOL SQUARE, S.W.
ATLANTA, GA 30334-1002

(DATE)

Project _____
PI No. _____

(Name), Regional Director
Federal Emergency Management Agency
Region IV
Mitigation Division
3003 Chamblee-Tucker Road
Atlanta, Georgia

Attn: (Regional Analyst)

Dear _____,

This project consists of the replacement of the existing 24 ft wide by 60 ft long bridge on _____ over _____ with a 38 ft wide by 130 ft long bridge. This site crosses the regulatory floodway established for _____ located in Unincorporated _____ County.

The proposed construction at this site increases the floodway elevations at published sections A, B and C in excess of 0.1 ft. This construction does not cause more than a 1.0 ft rise in the existing 100-year base flood elevation. The existing floodway width at section B is increased from 150 to 200 ft.

Included in this documentation for your use and files are:

1. A floodway map showing the location of the proposed site and the corrected floodway;
2. The published floodway tables for the stream reach;
3. Tables showing the results of the floodway calculations;
4. A detailed explanation of the floodway calculations;
5. A preliminary bridge layout;
6. A set of roadway plans;
7. Hard copies of the required floodway models; and
8. A computer disk with the required floodway models.

A letter of concurrence for this project from (name of affected community) has been requested.

This project is presently scheduled to be let to construction in _____. If you have any questions and/or comments, please contact _____ of the _____ Office at telephone number _____.

Attachments

cc: